

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2002-189000

(43)Date of publication of application : 05.07.2002

(51)Int.Cl.

G01N 21/956
H01L 21/66

(21)Application number : 2001-116647

(71)Applicant : NEC CORP

(22)Date of filing : 16.04.2001

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(30)Priority

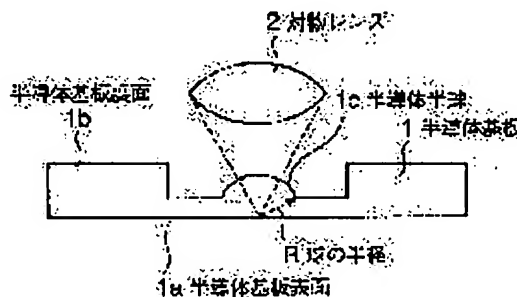
Priority number : 2000308890 Priority date : 10.10.2000 Priority country : JP

(54) SEMICONDUCTOR DEVICE, METHOD OF EVALUATING AND ANALYZING SEMICONDUCTOR DEVICE, AND WORKING DEVICE FOR SEMICONDUCTOR DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To stably enhance resolution in reverse face analysis, and to allow sure and easy analysis and evaluation for a semiconductor device of which the fineness progresses.

SOLUTION: A desired portion in a reverse face 1b of a semiconductor substrate is worked to form a semiconductor hemisphere 1c in the semiconductor device wherein an integrated circuit is formed in a obverse 1a of the semiconductor substrate. Reverse face analysis of high resolution is conducted using the semiconductor hemisphere 1c as a solid immersion lens.



LEGAL STATUS

[Date of request for examination] 16.04.2001

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or]

application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's
decision of rejection]

[Date of requesting appeal against examiner's
decision of rejection]

[Date of extinction of right]

(1) **Japanese Patent Application Laid-Open No. 2002-189000**

“Semiconductor Device, Evaluation and Analysis Method of a Semiconductor Device, and Processing Unit of a Semiconductor Device”

5 The following is English translation of an extract from the above-identified document relevant to the present application.

 While a grinding tool 3 having a groove 3a configured into a semicircular shape in cross section is pressed against a reverse surface of semiconductor substrate 1b and rotated
10 with a normal that runs through the centre of a trench 3 as an axis, a semiconductor substrate is grinded by abrasive such as diamond slurry and diamond paste.

 As a result, a convex semiconductor hemisphere 1c is formed along a semicircular trench 3a, having a rotation axis in the centre (see Fig 3 (a)).

 Depending on whether a semiconductor hemisphere 1c is a semispherical solid immersion
15 lens as shown in Fig 1 or a super semispherical solid immersion lens as shown in Fig. 2, the size and shape of a trench 3a of grinding tool 3 is selected and the depth for grinding is adjusted.